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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,124	03/26/2004	Patrik Algotsson	068758.0183	8821

7590

05/04/2005

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EXAMINER

DANG, TRUNG Q


ART UNIT

PAPER NUMBER

2823

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/810,124	<b>Applicant(s)</b> ALGOTSSON ET AL. 	
	<b>Examiner</b> Trung Dang	<b>Art Unit</b> 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8-10 and 20 is/are rejected.
- 7) ☒ Claim(s) 4-7 and 11-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)<br>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)<br>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/26/04</u> . | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____<br>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)<br>6) <input type="checkbox"/> Other: ____ |
|---|--|

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Oh (US 6,300,209).

With reference to Figs. 4A-4H, the prior art teaches a method to provide a triple well in an epitaxial based CMOS process comprising the steps of:

implanting the triple well 45 prior to the epitaxial deposition layer 47 (see Figs. 4C, 4E and related text).

For claim 8, Oh teaches said method comprising the steps of:

providing a semiconductor substrate 41/43 (Fig. 4C);

applying a first mask 44 having opening only in areas for said triple well (Fig. 4C);

applying an ion implant 45 (Fig. 4C);

applying a second mask 46 having openings surrounding said ion implant 45 (Fig. 4D);

depositing an epitaxial layer 47 (Fig. 4E);

implanting a first area 49 surrounding said ion implant (Fig. 4F);

Note that although not shown in the figure drawings, the right hand side mask layer 46 in Fig. 4D is understood to form surrounding ion implant region 45 because the buried N-well 50 (see Fig. 4H) surrounds P-well 52 (see Fig. 1F and col. 1, lines 44-46 for the triple well structure of prior art from which Oh's invention modifies).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 3, 9, 10, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh as above in view of Lien (US 5,470,766).

Oh teaches a process as noted above. Oh differs from the claims in that while Oh forms n-type triple well 45 of an n-type conductivity by implantation of phosphorous, the claims call for an implantation of arsenic to make the same.

Lien teaches phosphorous and arsenic can be used as an n-type dopant in forming an N well.

The subject matter as a whole would have been obvious to one of ordinary skill in the art to replace phosphorous with arsenic because the substitution of art recognized equivalents as shown by Lien would have been within the level of one skilled in the art.

For claim 3, see Fig. 4H for adding at least one NMOS device 55 in an achieved structure.

For claim 10, although Oh teaches a doping dose and an implanting energy as cited in col. 3, lines 56-60, the selection of a dose and energy as claimed would have been obvious since it is well settled that, absent a showing of criticality or unexpected result by applicant, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

For claim 20, although Oh is silent about the conductivity type of the substrate 41, it is inherent that the substrate 41 is of an p-type in a triple well structure because the p-type substrate will isolate N well 50 by pn junction.

### ***Allowable Subject Matter***

5. Claims 4-7, 11-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Claims 4, 5, and claims depended therefrom are allowable over prior art of record because the prior art does not teach or suggest the claimed limitation regarding the implantation of boron prior to the epitaxial deposition.

Claims 11, 12, and claims depended therefrom are allowable over prior art of record because the prior art does not teach or suggest the claimed features of providing a third mask before epitaxial deposition and etching the epitaxial layer.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is 571-272-1857. The examiner can normally be reached on Mon-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you


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have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Trung Dang', with a stylized, cursive script.

Trung Dang  
Primary Examiner  
Art Unit 2823

05/02/05